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ABSTRACT

A study was conducted to evaluate the effectiveness of the Tests of Adult Basic Education (TABE) in predicting success or lack of success in selected postsecondary health occupations programs. The predictor variables used in the project were the TABE reading and mathematics grade equivalent scores and the number of times each section of the TABE was taken. Criterion variables were (1) successful completion of a health program or withdrawal and (2) scores from the Kentucky Vocational Achievement Test (KVAT). The project sample included all students in Kentucky admitted to the following postsecondary health occupations programs who had taken the TABE for admission: practical nurse, dental assistant, surgical technology, respiratory therapy, radiologic technology, and medical assistant. The total population for the research was 1,485. Pearson product-moment correlation coefficients and true stepwise multiple regression analysis were used to test the correlation using .05 level of significance. Data analysis by program was conducted on sets of variables with complete data. The sample size for each analysis was reported. The TABE reading and mathematics grade equivalent scores and number of attempts were not good predictors of program completion or withdrawal. Discriminant analysis failed to classify completion or withdrawal correctly from any of the health programs. (Author/KC)

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HEALTH PROGRAM ENTRANT'S MATH/READING/SUCCESS REVIEW

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ABSTRACT

The purpose of this research project was to evaluate the effectiveness of the Tests of Adult Basic Education (TABE) to predict success or lack of success in selected post secondary Health Occupations' programs.

The predictor variables used in the project were the TABE reading and mathematics grade equivalent scores and the number of times each section of the TABE was taken. Criterion variables were (a) successful completion of a health program or withdrawal, and (b) scores from the Kentucky Vocational Achievement Test (KVAT).

The project sample included all students admitted to the following post secondary Health Occupations' programs and who had taken the TABE for admission. Practical Nurse (PN), Dental Assistant (DA), Surgical Technology (ST), Respiratory Therapy (RT), Radiologic Technology (X-Ray) and Medical Assistant (MA) programs. The total population for this project was 1485.

Pearson product-moment correlation coefficients and true stepwise multiple regression analysis were used to test the Hypothesis using .05 level of significance. Data analysis was conducted by program on sets of variables with complete data. The sample size for each analysis was reported.

The TABE reading and mathematics grade equivalent scores and number of attempts were not good predictors of program completors or withdrawals. Discriminant analysis failed to correctly classify completion or withdrawal from any of the health programs.

The number of TABE mathematics attempts explained 23.05% of the variance in 88 Surgical Technology's KVAT scores. TABE reading score and number of mathematices attempts accounted for 29.24% of variance in 134 Medical Assistants' KVAT scores. Less than 10% of the KVAT's variance was explained by any combination of predictor variables in the remaining population.

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INTRODUCTION

In 1985, Kentucky revised admission and exit requirements for post secondary students in state vocation-technical schools. Admission standards were changed and are listed in 709 KAR 1.070 which was effective July 9, 1986. The revised standards included the use of the Tests of Adult Basic Education (TABE) as an admission tool. Minimum scale scores for the mathematics and reading section were established by state personnel with input from teachers from each program area. Three levels of standards were set for admission. Level 1 requires scale scores of 479 for reading and 504 mathematics and the grade equivalents are 7.1 and 8.0 respectively. Level 2 requires a 542 reading and 544 mathematics scores which are grade equivalent of 8.5 for both sections. Level 3 standards require a 574 reading and 581 mathematics scores which are grade equivalent of 10.0 for both test scores. Applicants who fail to meet minimum admission scores can enroll in a remediation program and retake the TABE.

New exit requirements were adopted July 2, 1985 and listed in 705 KAR 4:210. Diploma requirements for post secondary students include attainment of Level 3 TABE scores. Students admitted under Level 1 and 2 standards should be enrolled in mathematics and reading remedial programs concurrent with enrollment in vocational programs in order to reach Level 3 standards for a diploma.

Level 3 standards are required for admission to six of seven Health Occupations programs and Level 1 for the other. The Health Occupations' teachers and state personnel were concerned about both the level of scores and amount of time spent in remediation to obtain the required scores. Sources of their concerns were the health programs' curriculum and licensure

examinations. Applicants to health fields should possess the necessary basic reading and mathematics skills to successfully complete the course of study due to the high level of basic skills needed to comprehend the content within the various programs. Textbooks and supporting materials used in some health programs are written at the 12th grade or higher. State or national licensure examinations are required of Medical Assistant (MA), Practical Nurse (PN), Radiologic Technology (RT), Surgical Technology (ST) and Dental Assisting (DA) graduates prior to entering the workforce. Some of these tests are written at or above the 12th grade level.

The purpose of the funded research project was to evaluate the effectiveness of the TABE as an admissions requirement for post secondary Health Occupations' programs. A review of literature was conducted to identify similar studies. The related research would provide verification of variables used and projects' methodology.

LITERATURE REVIEW

Due to the variety of types of health programs, the literature search focused primarily on registered nursing (RN) and licensed practical nursing (LPN) prediction studies. Included in the review were predictions of success in vocational programs and use of TABE as a predictor variable.

Registered Nursing Prediction Studies

The vast amount of predicting success in RN programs have been reviewed and summarized by three authors. Taylor (1966), Schwirian (1978) and Grant (1986) identified a total of two hundred and seventy-one prediction studies. The authors categorized the prediction studies into prediction of program completion or non-completion, measures of success in nursing school and success on licensure examination or job performance.

One or combinations of criterion variables were used. The most

frequently used were nursing grade point averages (NGPA), nursing achievement test, the National League for Nursing Achievement Test (NLN ACH) or the Psychological Corporation Achievement Test (PCAT) and scores from state licensure examinations, the State Board Test Pool Examination (SBTPE). In recent studies, the SBTPE has been replaced with the National Council Licensure Examination for Registered Nurses (NCLEX-RN).

The predictor variables were of three types and one or combinations were used to predict success. One group of variables used some measure of past academic achievement such as high school or college grade point averages and rank in school. Achievement, academic aptitude and intelligence test scores were another category of predictor variables. Nursing aptitude tests, National League of Nursing Pre-Nursing Guidance and Entrance Examination (NLN PNG) and Psychological Corporation Tests - Pre Nursing Examination (PCT PNE) were the last category of variables.

Taylor (1966) concluded that high school grades and standardized academic achievement or intelligent test can be used to predict success in RN programs. The most reliable predictors, with the largest amount of variance accounted, for were obtained from multiple correlation studies.

Schwirian (1978) reported the program completion studies had not identified a consistent profile of characteristics of program non-completors. The College Board Scholastic Aptitude Test (SAT), American College Testing Program (ACT) and the NLN PGN were highly correlated with NLN ACH.

Grant (1986) reported that the most consistent measure of nursing grade point average (NGPA), NLN ACH and SBTPE was some measure of reading ability.

Practical Nursing Prediction Studies

Only a few studies were conducted to predict success in licensed practical nursing (LPN) programs. The predictor variables used in practical

nursing studies were more varied and results were more diverse than in registered nursing studies. The National League of Nursing (NLN) (1954), Rowan (1959), Meadow (1961, 1964), McCormick (1966), Weber (1972, 1973), Seither (1974), Kittner (1982) and Treich and Boss (1987) reported a positive significant correlation between age and success in LPN programs. Older students performed better on criterion variables than did younger students. These finding could result because of differences between applicants to RN and LPN programs. LPN applicants are older, have less formal education and have more family and financial obligations than do RN applicants.

The relationship between some measures of past education and success was included in four studies. NLN (1954) and Rowan (1959), reported that older students with less formal education tended to score higher on measures of success than younger students with more formal education. Meadow (1964) and Treich et al., (1987) reported a different finding. They concluded that students with more formal education scored higher on the criterion variables than students with less formal education.

Intelligence tests have been studied as predictors of success in practical nursing programs. Grippando (1973) reported a significant positive correlation between ACT and GPA, .438 and State Board Licensing Examination (SBE) of .542.

Kittner (1982) studied the ability of the Tests of Adult Basic Education (TABE) to predict success in LPN and business education post secondary vocational programs. The reading section of the TABE provided the best predictor of success for the LPN program but sex and race alone predicted equally as well.

Vocational Education Prediction Studies

Results of predictions of success in vocational education programs do not produce an homogenous set of variables to predict success across vocational programs. Success in several kinds of vocational programs depends upon a great variety of cognitive and psychomotor skills. Paterson (1956) concluded that intelligence and verbal ability measures are the best predictors of success across vocational programs. Programs that require high level cognitive skills demonstrate a larger correlation between intelligence measures and successful program completion. Prediger, (1968) reviewed literature from 1954-1967. He concluded that success was easier to predict in some programs that in others.

Intelligence tests such as the ACT, California Test of Reading Ability and TABE have identified as significant predictors of success in vocational programs. Aptitude tests and interest tests have also been found to be correlated to success.

Tests of Adult Basic Education Studies

The Tests of Adult Basic Education, 1976 Edition (TABE-76) were adapted from the California Achievement Tests, Edition 1970 (CAT-70).

TABE was developed to measure the reading, mathematics and language skills of adults. TABE measures understanding and application of materials rather than specific knowledge or recall. TABE was designed to be used as a placement, diagnosis, self-appraisal or measurement of instructional gains test.

In 1975, the TABE was equated to the CAT using a nation sample of 18,000 students. Level E, M and D of the TABE were equated to Levels 2, 3, and 4 of CAT and normative tables were developed. In addition, the two parallel forms of TABE were significantly correlated to the corresponding CAT batteries.

Two studies were identified that used TABE as a predictor variable to measure success in vocational education programs. Kittner (1982) reported a positive correlation between the TABE and program completion using a sample of 100 LPN students. She reported no correlation between TABE and 100 students in business education. Clemens (1983) found no correlation between TABE and completion of a child care program or on the job performance.

The literature review identified the successful use of TABE as a predictor of success in LPN programs. Gender and race was correlated to program completion or attrition in LPN programs. RN studies using multiple regression identified measures of past academic achievement, achievement test and nursing aptitude test significantly correlated to success in RN programs.

PURPOSE OF THE STUDY

The purpose of this research project was to evaluate the effectiveness of the Tests of Adult Basic Education as an admission tool for applicants to post secondary Health Occupations' programs. The study evaluated the implementation of TABE entrance requirement and its effect on success or lack of success of applicants.

The predictor variables used were (a) original TABE reading grade equivalent score (TABER1); (b) original TABE mathematics grade equivalent score (TABEM1); (c) number of repeat TABE reading scores per individual (TABER); and, (d) the number of repeat TABE mathematics scores per individual TABEM).

The criterion variables used were (a) completion of the health program or withdrawal (CW); and, (b) Kentucky Vocational Achievement Test scores (KVAT).

Applicants admitted to any of the health programs must complete the course of study maintaining a seventy (70) per cent average. The length of programs vary from eleven months to two years.

The Kentucky Vocational Achievement Test (KVAT) was developed to measure students achievement of the specific programs content. The Licensed Practical Nursing programs used the nationally standardized test LPN Assessment Test. In other programs, the KVAT was developed by teachers from each program area with assistance from the Office of Vocational Education (OVE). Minimum passing scores were set for each program.

This prediction study had several limitations. Because grade equivalent scores are not true interval data the power of the test of significance was reduced. Due to the existence of minimum admission scores, the range of TABE scores was somewhat restricted. Original TABE scores were used to expand the range. An additional limitation of this study was lack of complete data for all subjects. Statistical analysis was conducted only on variables with complete data.

HYPOTHESIS

1. There is a relationship between entrants'
   (a) TABE reading and mathematics grade equivalent scores; and
   (b) number of TABE reading and mathematics attempts and completion or withdrawal from a Health Occupations' program.
2. There is a relationship between entrants'
   (a) TABE reading and mathematics grade equivalent scores; and
   (b) number of TABE reading and mathematics attempts and KVAT scores.

RESEARCH METHODS

An ex post facto design of the co-relational type was used to test the hypotheses. The Vocational Education directory was used to identify the types

and location of health programs in the state. Medical Assistant (MA), Practical Nurse (PN), Radiologic Technology (X-Ray), Respiratory Therapy (RT), Surgical Technology (ST) and Dental Assistant (DA) programs were identified as the projects sample. Subject selection criteria were all students admitted to each program and who had taken the TABE test.

DATA COLLECTION

A letter of support for the project was obtained from the Deputy Superintendent of Vocational Education. A copy of the letter was sent to an identified contact person at each school and respective counselors, principals, and regional administrators. A form designed to identify times and dates for on-site data collection was included with the letter. After the forms were tabulated, site visits were made by phone and confirmed by letter.

A standard procedure was followed at each school. The contact person was met and subjects to be included were identified. Records for the subjects were located and raw data were recorded for each subject. A list by name of all students by program was developed. Each school, program and student was assigned a number. In schools with incomplete data, the master list was left with the contact person for use during a return visit. When all data were collected, the master list was destroyed so that no student could be identified individually.

Data were entered into the University of Louisville's main frame computer utilizing the Statistical Analysis System (SAS). Completion/withdrawal was entered using alphabetic codes and SAS transformed to numerical codes.

Means, standard deviations and minimum/maximum values were calculated for TABE reading, mathematics and KVAT scores. Frequency distributions were calculated for program completion or withdrawal, and number of reading and mathematics attempts.

Point-biserial correlation coefficients were calculated for each predictor variable to the criterion variable program completion or withdrawal. Pearson product-moment correlation coefficients were calculated for each predictor to the criterion variable KVAT. In addition, discriminant analysis was conducted to classify group membership in completion/withdrawal. True stepwise multiple regression analysis were conducted to examine the strength and magnitude of the relationship between predictor variables and each criterion variable. The results of these analyses were used to test the two research Hypothesis.

All analysis was conducted by program to identify any differences or trends unique to each health program.

ANALYSIS OF THE DATA

The population included all entrants to Practical Nurse (PN), Dental Assistant (DA), Surgical Technology (ST), Respiratory Therapy (RT), Radiologic Technology (X-ray) and Medical Assistant (MA) programs for the years 1985 and 1986 and who were required to take the TABE test for admission. The total sample size is not reflective of the yearly completion withdrawal rates per program due to the variation in implementation of the TABE as an admission tool. The sample size was also affected by the length of each health program.

Data analysis was conducted by program and on sets of variables with complete data. The sample size for each analysis was reported.

The largest sample size was from the Practical Nurse programs. Table I represents the frequency of PN completors and withdrawals. Three hundred and twenty (31.9%) failed to complete the program while six hundred and eighty-two (68.1%) completed. Table II represents the number of times the TABE reading and mathematics test was taken. Eight hundred forty-three (85.6%) of PN entrants passed the reading section the first time while only 62.3% required

one mathematics test. Table III represents the sample size, means, standard deviations and ranges of PN's TABE reading, mathematics and KVAT scores. PN entrants' TABE reading grade equivalent mean was 11.22 with a range of 6.0 to 12.9. Mathematics mean was 10.06 with a range of 5.0 to 12.9. The mean of the KVAT scores was 528 with a range of 120 to 979. Several KVAT scores appeared to be spuriously high.

TABLE I

FREQUENCY DISTRIBUTION OF COMPLETION/WITHDRAWAL
PRACTICAL NURSE PROGRAMS

	Frequency	Percent	Cumulative Frequency
Withdrew	320	31.9	320
Completed	682	68.1	1002

TABLE II

FREQUENCY DISTRIBUTIONS FOR NUMBER OF TABE ATTEMPTS
PRACTICAL NURSE PROGRAMS

Variable	Number of Attempts	Frequency	Percent	Cumulative Frequency
Reading	1	843	85.6	843
	2	123	12.5	966
	3	16	1.6	982
	4	2	0.2	984
	5	1	0.1	985
Data not available		17		1002
Mathematics	1	613	62.3	613
	2	296	30.0	909
	3	63	6.4	972
	4	7	0.7	979
	5	6	0.6	985
Data not available		17		1002

TABLE III

DESCRIPTIVE DATA FOR PRACTICAL NURSE PROGRAMS

Variable	n	Mean	Standard Deviation	Minimum Value	Maximum Value
Reading Score	985	11.22	1.37	6.0	12.9
Mathematics Score	984	10.06	1.73	5.0	12.9
KVAT Score	685	528.01	149.42	120.0	979.0

Table IV represents the percent of Dental Assistant program completors or withdrawals. Of the 150 included in the sample, 21.33% withdrew and 78.67% completed. TABE reading and mathematics grade equivalent and KVAT frequency distributions for the DA entrants are represented in Table V. One hundred twenty-two (91.04%) DA entrants obtained a 10th grade reading score on the first attempt and ninety (74.38%) required only one mathematics test. Descriptive data for DA entrants ae included in Table VI. TABE reading grade equivalent mean was 11.0 with a 6.7 to 12.9 range. TABE mathematics mean was 9.77 and a range of 6.4 to 12.9. KVAT score mean was 81.8 with a 55 to 119 range.

TABLE IV

Frequency Distribution of Completion/Withdrawal
Dental Assistant Programs

	Frequency	Percent	Cumulative Frequency
Withdrew	32	21.33	32
Completed	118	78.67	150

TABLE V

Frequency Distributions Number of TABE Attempts
Dental Assistant Program

Variable	Number of Attempts	Frequency	Percent	Cumulative Frequency
Reading	1	122	91.04	122
	2	9	6.72	131
	3	1	0.75	132
	4	2	1.49	134
Data not available		16		150
Mathematics	1	90	74.38	90
	2	26	21.49	116
	3	5	4.13	121
Data not available		29		150

TABLE VI

Descriptive Data for Dental Assistant Programs

Variable	N	Mean	Standard Deviation	Minimum Value	Maximum Value
Reading Score	134	11.00	1.64	6.7	12.9
Mathematics Score	121	9.77	1.81	6.4	12.9
KVAT Score	88	81.80	11.80	55.0	119.0

The frequency distribution of Surgical Technology completion or withdrawal is represented in Table VII. Of the 132 Surgical Technology entrants, 25.76% withdrew and 74.24% completed the program. Table VIII represents the frequency distributions of TABE attempts for ST entrants. One hundred and seven (92.24%) and ninety-one (79.13%) required only one reading and mathematics attempt respectively. Table IX represents the descriptive

data for ST entrants. TABE reading grade equivalent mean was 11.8 with and 8.2 to 12.9 range. The mathematics mean was 10.9 with a 5.7 to 12.9 range. The KVAT mean was 147.1 with a 103 to 188 range.

TABLE VII

Frequency Distribution of Completion/Withdrawal
Surgical Technology Programs

	Frequency	Percent	Cumulative Frequency
Withdrew	34	25.76	34
Completed	98	74.24	132

TABLE VIII

Frequency Distributions Number of TABE Attempts
Surgical Technology Programs

Variable	Number Attempts	Frequency	Percent	Cumulative Frequency
Reading	1	107	92.24	107
	2	8	6.90	115
	3	1	.86	116
Data not available		16		132
Mathematics	1	91	79.13	91
	2	15	13.04	106
	3	7	6.09	113
	4	2	1.74	115
Data not available		17		132

TABLE IX

Descriptive Data for Surgical Technology Programs

Variable	n	Mean	Standard Deviation	Minimum Value	Maximum Value
Reading Score	116	11.8	1.33	8.2	12.9
Mathematics Score	115	10.9	1.89	5.7	12.9
KVAT Scores	86	147.1	21.20	103.0	188.0

Completion and withdrawal frequencies for Respiratory Therapy are represented in Table X. Twenty-nine (32.95%) withdrew and fifty-nine (67.05%) completed of the total sample of eighty-eight. Eighty-three (94.32%) and eighty (90.91%) passed the reading and mathematics sections of TABE on the initial attempt (Table XI). The ST entrants' TABE reading mean was 11.69 with an 8.2 to 12.9 range. The mean of KVAT scores was 82.3 and ranged from 60 to 106 (Table XII).

TABLE X

Frequency Distributions Completion/Withdrawal
Respiratory Therapy Programs

	Frequency	Percent	Cumulative Frequency
Withdrew	29	32.95	29
Completed	59	67.05	88

TABLE XI

Frequency Distributions Number of TABE Attempts
Respiratory Therapy Programs

Variable	Number of Attempts	Frequency	Percent	Cumulative
Reading	1	83	94.32	83
	2	4	4.55	87
	3	1	1.14	88
Mathematics	1	80	90.91	80
	2	7	7.95	87
	3	1	1.14	88

TABLE XII

Descriptive Data for Respiratory Therapy Programs

Variable	N	Mean	Standard Deviation	Minimum Value	Maximum Value
Reading Score	88	11.69	1.28	8.2	12.9
Mathematics Score	88	11.14	1.74	5.6	12.9
KVAT Score	38	82.30	10.70	60.0	106.0

Medical Assistant entrants' completion and withdrawal frequencies are represented in Table XIII. Twenty-eight (16.47%) withdrew and one hundred forty-two (83.53%) completed the program of the one hundred seventy MA entrants. Table XIV represents the frequency distribution of MA's TABE reading and mathematics attempts. One hundred and thirty-nine (85.80%) and eighty-nine (54.95%) successfully passed the TABE on the initial attempt. Sixty-five (40.12%) required two attempts to pass the mathematics section.

The TABE reading grade equivalent mean was 10.85 with a range of 5.0 to 12.9 (Table XV). The mathematics mean was 9.48 with a 5.0 to 12.9 range in grade equivalents. KVAT mean for MA entrants was 112.1 and had a range from 77 to 149.

TABLE XIII

Frequency Distribution of Completion/Withdrawal
Medical Assistant Programs

	Frequency	Percent	Cumulative Frequency
Withdrew	28	16.47	28
Completed	142	83.53	170

TABLE XIV

Frequency Distributions Number of TABE Attempts
Medical Assisting Programs

Variable	Number of Attempts	Frequency	Percent	Cumulative Frequency
Reading	1	139	85.80	139
	2	22	13.58	161
	3	1	.62	162
Data not available		8		170
Mathematics	1	89	54.95	89
	2	65	40.12	154
	3	6	3.70	160
	4	2	1.23	162
Data not available		8		170

TABLE XV

Descriptive Data for Medical Assistant Programs

Variable	N	Mean	Standard Deviation	Minimum Value	Maximum Value
Reading Score	162	10.85	1.65	5.0	12.9
Mathematics Score	162	9.48	2.05	5.0	12.9
KVAT Score	134	112.10	13.30	77.0	149.0

The total sample for Radiologic Technology program entrants was limited by the number of students admitted with the Comprehensive Test of Basic Skills (CTBS). No statistical analysis was possible due to the small sample size.

The initial analysis conducted to test Hypothesis 1 was computation of point-biserial correlation coefficients between each predictor variable and the criterion variable of program completion or withdrawal. Point-biserial correlation coefficients establish the direction and magnitude of the relationship between prediction and criterion variables. The analysis was conducted per individual Health Occupations' programs. Statistically significant correlation coefficients were obtained from the Practical Nurse and Surgical Technology programs. Table XVI indicates that all of the predictor variables were correlated to completion or withdrawal from the Practical Nurse programs. The number of TABE attempts were negatively correlated and actual scores positively correlated. The magnitude of the correlations were relatively small, ranging from a -0.17 (reading attempts) to a +0.14 (mathematics scores). Table XVII indicates that mathematics scores correlated to completion or withdrawal from Surgical Technology programs. The r_{pb} of 0.19 was significant with $p = < .05$.

TABLE XVI

Correlations Between PREDICTOR VARIABLES
and Completion/Withdrawal
Practical Nurses Program

Variable	r_{pb}	P	n
Reading Attempts	-.19	.0001	986
Mathematics Attempts	-.17	"	986
Reading Score	.22	"	985
Mathematics Score	.14	"	984

TABLE XVII

Correlations Between Predictor Variables and
Completion/Withdrawal
Surgical Technology Program

Variable	r_{pb}	P	n
Mathematics Score	.19	.0364	115

Data from the Practical Nurse and Surgical Technology programs were subjected to stepwise multiple regression analysis to identify the amount each predictor variable contributed to the criterion variable. The percent of variance explained by the regression model was computed by multiplying the model's r by 100.

Table XVIII indicates the order in which the variables entered in the Practical Nurse stepwise regression equation for 984 Practical Nurse entrants. TABE reading scores and number of mathematics scores were entered. The proportion of variance accounted for in program completion or withdrawal by these variables was 5.85% (R^2 = 0.0585).

TABLE XVIII

Summary Table for Stepwise Regression For Criterion
Variable Completion/Withdrawal
Practical Nurse Program

Step	Variable Enter	Number In	Partial R ** 2	Model R ** 2	F	PROB > F
1	Reading Score	1	0.0507	0.0507	52.4525	0.0001
2	Mathematics Attempts	2	0.0078	0.0585	8.0823	0.0046

Table XIX indicates that mathematics scores and number of reading attempts were correlated to completion or withdrawal from Surgical Technology programs for the 115 entrants. The amount of variance explained by these variables was only 8.13% (R^2 = 0.0813).

TABLE XIX

Summary Table for Stepwise Regression For Criterion
Variable Completion/Withdrawal
Surgical Technology Program

Step	Variable Entered	Number In	Partial R ** 2	Model R ** 2	F	PROB > F
1	Mathematics Score	1	0.0382	0.0382	4.4822	0.0364
2	Reading Attempts	2	0.0432	0.0813	5.2627	0.0237

Discriminant analysis was unable to correctly classify membership into completion or withdrawal for any of the Health Occupations' programs. Hypothesis 1 was rejected for Dental Assistant, Respiratory Therapy, Radiology Technology, and Medical assistant programs. No predictor variables were correlated to program completion or withdrawal. Hypothesis 1 was retained for

Practical Nurse and Surgical Technology programs. Hypothesis 2 was initially tested by calculating Pearson correlation coefficients for each of the predictor variables and the criterion variable, KVAT scores. Statistically significant correlation coefficients were obtained in all programs except Respiratory Therapy. The reading and mathematics attempts were negatively correlated to the Practical Nurse's KVAT scores and the reading and mathematics scores were positively correlated (Table XX). The degree of correlations were small ranging from 0.08 to 0.14.

TABLE XX

Correlation Between Predictor Variables and KVAT Scores
Practical Nurse Program

Variable	r	P	n
Reading Attempts	-.14	.0003	675
Mathematics Attempts	-.08	.0300	675
Reading Score	.27	.0001	674
Mathematics Score	.14	.0003	674

The mathematics score was positively correlated to the Dental Assistant's KVAT scores. Table XXI indicates a moderate amount of correlation with r = 0.26.

TABLE XXI

Correlations Between Predictor Variables
and KVAT
Dental Assistant Program

Variable	r	P	n
Mathematics Score	.26	.0326	66

Table XXII indicates that mathematics attempts was negatively correlated to Surgical Technology KVAT scores and TABE reading and mathematics scores were positively correlated. The correlations of -0.48 for mathematics attempts and 0.46 for mathematics scores represents the greatest degree of correlations for two variables within a single program.

TABLE XXII

Correlation Between Predictor Variables
and KVAT Scores
Surgical Technology Program

Variable	r	P	n
Mathematics Attempts	-.48	.0001	68
Reading Score	.33	.0058	69
Mathematics Score	.46	.0001	68

Medical Assistant's KVAT scores were positively correlated to both the TABE reading and mathematics grade equivalent scores. Table XXIII indicates

that the reading score was moderately correlated with and r = 0.48 and a low mathematics correlation of 0.18.

TABLE XXIII

Correlations Between Predictor Variables and KVAT Scores
Medical Assistant Program

Variable	r	P	n
Reading Score	.48	.0001	127
Mathematics Score	.18	.0408	127

Stepwise multiple regression analysis was conducted on data from the Practical Nurse, Dental Assistant, Surgical Technology and Medical Assistant programs to obtain r-square for predictor variables and the model's regression r-square.

All predictor variables were correlated to KVAT scores from the Practical Nurse programs but only one variable entered the true stepwise regression equation due to the low semipartial correlations of the other variables. Table XXIV indicates that TABE reading score explained only 7.48% (R^2 = 0.0748) of the variance in KVAT scores for 685 Practical Nurse students.

TABLE XXIV

Summary Table for Stepwise Regression For Criterion Variable KVAT Scores
Practical Nurse Program

Step	Variable Entered	Number In	Partial R ** 2	Model R ** 2	F	PROB > F
1	Reading Score	1	0.0748	0.0748	54.3075	0.0001

Table XXV indicates that TABE mathematics scores explained 6.10% (R2=0.0610) of 88 Dental Assistants' KVAT scores.

TABLE XXV

Summary Table for Stepwise Regression For Criterion
Variable KVAT Scores
Dental Assistant Program

Step	Variable Entered	Number In	Partial R ** 2	Model R ** 2	F	PROB > F
1	Mathematics Score	1	0.0610	0.0610	4.0909	0.0474

Three variables were moderately correlated to the Surgical Technology's KVAT scores and only mathematics attempts entered the stepwise regression equation. Table XXVI indicates that the number of mathematics TABE scores explained 23.50% (R^2 = 0.2350) of variance in KVAT scores for 86 students.

TABLE XXVI

Summary Table for Stepwise Regression For Criterion
Variable KVAT Scores
Surgical Technology Programs

Step	Variable Entered	Number In	Partial R ** 2	Model R ** 2	F	PROB > F
1	Mathematics Attempts	1	0.2350	0.2350	20.2767	0.0001

TABE reading scores explained 23.51% of the Medical Assistant's KVAT scores. Table XXVII indicates that mathematics attempts added 5.72% to the total explained variance of 29.24% (R^2 = 0.2924) for 134 students.

TABLE XXVII

Summary Table for Stepwise Regression For Criterion Variable KVAT Scores Medical Assistant Programs

Step	Variable Entered	Number In	Partial R ** 2	Model R ** 2	F	PROB > F
1	Reading Score	1	0.2351	0.2351	38.4210	0.0001
2	Mathematics Attempts	2	0.0572	0.2924	10.0311	0.0019

Hypothesis 2 was rejected for the Respiratory Therapy program. None of the predictor variables were correlated to KVAT scores. Part or all of Hypothesis 2 was retained for the Practical Nurse, Dental Assistant, Surgical Technology and Medical Assistant programs.

CONCLUSIONS

The purpose of this project was to evaluate the effectiveness of the TABE as an admission tool for post secondary Health Occupations' programs. The TABE reading and mathematics grade equivalent scores and number of times each section was retaken were the predictor variables. Criterion variables were program completion or withdrawal and KVAT scores.

Program completion or withdrawal was correlated with all predictor variables in the Practical Nurse programs and mathematics scores were correlated in the Surgical Technology program. The correlation coefficients

and r-squares from stepwise multiple regression analysis were relatively small. Less than one-tenth of the variance was explained by the predictor variables. Discriminant analysis failed to correctly classify program completors or withdrawals. The TABE reading and mathematics grade equivalent scores and number of attempts were not good predictors of program completion or withdrawal.

The predictor variables were correlated with KVAT scores in the Practical Nurse, Dental Assistant, Surgical Technology and Medical Assistant programs. Correlation coefficients and r-squares from the Practical Nurse and Dental Assistant programs were significant but small. Less than one-tenth of the KVAT variance was explained by the predictor variables.

Correlation coefficients from the Surgical Technology and Medical Assistant programs were significant. TABE mathematics attempts explained about one quarter (23.50%) of the Surgical Technology's KVAT scores. TABE reading grade equivalent scores and number of mathematics attempts explained about one-third (29.24%) of the Medical Assistants' KVAT scores.

The number of mathematics attempts and TABE reading scores appeared to be statistically significant predictors of KVAT scores in the Surgical Technology and Medical Assistant programs. The sample size of these programs were 86 and 134 respectively, and were considerably less than the 685 Practical Nurse sample. The high percent of KVAT variance explained in the two programs could be due to the small sample size.

The TABE reading and mathematics grade equivalents and number of attempts were not statistically significant predictors of success or lack of success in any of the post secondary Health Occupations' programs. These findings could result from the existance of a minimum required TABE grade equivalent level. The range of TABE scores were limited and inclusion of the initial scores only

expanded the range down to the 5.0 grade level.

The number of mathematics attempts appeared to be a useful predictor but only in programs with small sample sizes.

Overall, the finding of this study revealed that the TABE was not a good predictor of success or lack of success in post-secondary Health Occupations' programs.

RECOMMENDATIONS

The following recommendations are based upon the findings of the current research project.

1. Additional studies, with larger sample sizes, should be conducted to further evaluate the predictive ability of number of mathematic attempts.
2. A similiar study should be designed and conducted to avoid the limitations imposed upon this study. Eliminate the minimum TABE scores, use TABE scale scores and increase sample size.

BIBLIOGRAPHY

Bailey, L. J. (1968). Lets' examine...factors related to success in practical nursing programs. Nursing Outlook, 7, 16-21.

Blattner, B., Wenderoth, J. & Moore, E. (1984). A post secondary prevocational education model: A guide for implementation. A research verified program to help the high-risk student complete post secondary education. (ED 246 283)

Buros, O. K. (1978). The eighth mental measurements yearbook, 2. Highland Park, NJ: Gryphon Press.

Clemens, J. (1983). Use of the tests of adult basic education-76 for assessing reading, mathematics, and language skills needed for vocational training and placement in child care services. (ED 267 923).

Firstman, A. (1983). Policy evaluation: Use of the PSB-aptitude test as an admission requirement for the LPN program. (ED 238 480).

Georgia State Department of Education. (1977). A pre-vocational developmental program for Georgia's area vocational-technical schools. (ED 146 424).

Grant, R. E. (1986). Predicting academic success. Review of Research in Nursing Education: Volume 1. William L. Holzemer, Editor. 93-105.

Grant, W. V. (1976). Digest for educational statistics. National Center for Educational Statistics. 153.

Grippando, G. (1973). ACT: Its relationship to practical nursing education. (ED 099 013).

Grubbs, A. (1960). Do home responsibilities affect grades? Practical Nursing, 10, 21-22.

Hole, W., & Seggerson, S. C. (1980). External high school diploma program evaluation project. Final report. (ED 195 691).

Kittner, M. L. (1982). Validating the use of the tests of adult basic education for predicting success in selected vocational/technical programs. Unpublished doctoral dissertation, University of South Florida.

Layton, H. (1959). Why do they drop out? Practical Nursing, 9, 12-13.

LPN Assessment Development & Technical Report. (1984). Educational resources for allied medical services. Shawnee Mission, KS.

McCormick, A. G. (1966). An investigation of reading skills, general mental ability and personality variables used in the selection of practical nursing students. Unpublished doctoral dissertation, Oklahoma State University.

Meadow, L. (1961). Prediction of success in practical nursing. Unpublished doctoral disertation, Wayne State University.

Meadow, L. (1963). Age and marital status and their relationship to success in practical nursing. Nursing Outlook, 2, 289-290.

Meadow, L. (1964). Assessment of students for schools of practical nursing. Journal of Nursing Research, 13, 222-229.

National League of Nursing Education (1954). Factors in the success of students in schools of practical nursing. Nursing Outlook, 2 423-427.

Patterson, D. H. (1956). Predicting success in trade and vocational school courses: A review of the literature. Educational and Psychological Measurement, 16, 312-400.

Prediger, D. J. (1968). Predictors of success in high school level vocational education programs: A review, 1954-1957. The Personnel and Guidance Journal, 47, 137-145.

Rowan, H. (1959). The older the better. Practical Nursing, 9, 13-14.

Rowland, H. S. (1978). The nurse's almanac. Aspen Systems Corporation, Germantown, Maryland, 313-327.

Schwirian, P. M. (1978). Prediction of successful nursing performance. U. S. Department of Health, Education, and Welfare. DHEW Pub No. (HRA) 77-27.

Seither, F. G. (1974). A predictive validity study of screening measures used to select practical nursing students. Nursing Research, 23, 60-63.

Sternlicht, M., & Cavallo, M. (1965). Screening techniques in the selection of practical nursing candidates. Nursing Research, 14, 170-172.

Taylor, C. W., Nahm, L., et al. (1966). Selection and recruitment of nurses and nursing students: A review of research studies and practices. University of Utah Press.

Treich, M. & Boss, M. (1987). Predictors of success in LPN/RNA programs. Journal of Practical Nursing, 37, 44-47.

Triegs, E. W. & Clark, W. W. (1976). Tests of adult basic education: Technical report. CTB/McGraw Hill, Montery, CA.

Weber, L., King, M. F., & Pitts, G. A practical method of selecting students for practical nursing programs. Journal of Industrial Teacher Education, 9 48-52.

Weber, L., et al. (1973). Predicting success in schools of practical nursing. Educational and Psychological Measurement, 943-945.